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# Sustainable Infrastructure Development in The IKN Region (Nusantara Capital): Simulation of The Smart Self-Sustaining Urban Center Area Development

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# SUSTAINABLE INFRASTRUCTURE DEVELOPMENT IN THE IKN REGION (NUSANTARA CAPITAL): SIMULATION OF THE SMART SELF-SUSTAINING URBAN CENTER AREA DEVELOPMENT

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## ABSTRACT

Embarking on the quest for a sustainable urban future, this research immerses itself in the vibrant landscape of "Sustainable Infrastructure Development in the IKN Region (Nusantara Capital)." This study investigates the financial viability and economic attractiveness of the Five City project, focusing on efficient infrastructure management for sustainable settlement development. The core facility comprises four vertical residential towers with supporting amenities. The research aims to evaluate the project"s feasibility over a 25-year investment period through comprehensive financial analyses.The research employs a structured approach, encompassing regulatory analysis, stakeholder identification, financial capability analysis, and risk management. Parameters such as Net Present Value (NPV), Benefit/Cost Ratio (BCR), Internal Rate of Return (IRR), and Payback Period are used for economic feasibility analysis. The study employs a detailed Risk Breakdown Structure (RBS) and Risk Register for risk management. The results collectively highlight the project"s promising economic outlook and proactive risk management approach.In conclusion, the study underscores the feasibility of the Five City project as a sound venture in project financing. The findings contribute valuable insights into infrastructure development, project finance, and risk management, providing a blueprint for sustainable housing projects in the Nusantara Capital Region. Recommendations include continuous monitoring, transparent communication, and adaptability for long-term success.

***Keywords:*** *Economic feasibility; Infrastructure development; Nusantara Capital Region; Project financing; Sustainable settlement*

## INTRODUCTION

Efficient infrastructure management plays a pivotal role in advancing sustainable settlement development (Berawi et al., 2016; Lu et al., 2024). This not only involves the physical construction of infrastructure but also entails effective considerations in its management and funding (Gatti, 2024a). Sustainable settlements demand well-thought-out infrastructure management strategies, carefully engineered financing mechanisms, and prudent project investments (McCawley, 2015; Priyanta & Zulkarnain, 2023). This study will elucidate the intricate connections among these elements in the context of housing and settlement development in the Nusantara Capital Region (IKN). Within this research framework, the conceptual "Five City" will be utilized as a comprehensive design to simulate and analyze the region's self-sustaining capabilities.

According to Law Number 1 of 2011, settlements are defined as integral components of habitation environments consisting of multiple housing units with associated urban or rural public facilities, utilities, and other functions (Aprilianto et al., 2021). The primary objective of settlement organization is to fulfill the community's entitlement to suitable habitation within a healthy, safe, harmonious, and orderly environment (Chan et al., 2022). The concept of a healthy environment encompasses considerations such as soil and air quality, location factors, and the provision of facilities that meet established standards (Charlton Parlindungan et al., 2023; Farida et al., 2019; Kalsum et al., 2020).

In the realm of infrastructure project finance management, the term 'project finance' is employed, typically associated with funding models where invested capital corresponds to the revenue generated by the project (Xue et al., 2020). This approach involves a specialized structure with the establishment of a dedicated entity, known as the Special Purpose Vehicle (SPV), responsible for orchestrating and overseeing the project. Projects adopting the project finance methodology often involve predetermined buyers (off-take agreements) and intricate risks necessitating meticulous risk mitigation structures (Gatti et al., 2024). Key stakeholders in project finance encompass sponsors, SPVs, contractors, lenders, and insurers, each contributing specialized roles to ensure the project's success (Xue et al., 2020). Furthermore, additional stakeholders such as off-takers, third-party operators, suppliers, and governmental entities may become involved based on the project's nature.

Economic feasibility analysis employs various parameters, including Net Present Value (NPV), Benefit/Cost Ratio (BCR), Internal Rate of Return (IRR), and Payback Period (Nechifor et al., 2022). In this study, a simulation of infrastructure financing engineering will be conducted, adopting the perspective of the SPV managing the project. The overarching goal of this research is to provide profound insights into infrastructure funding management within the context of sustainable housing development in IKN and its adjacent regions. Consequently, it aims to contribute significantly to the understanding of property feasibility studies in Indonesia. Moreover, the findings are poised to enhance the comprehension of property feasibility studies in Indonesia, facilitating their application in analogous projects in the future.

## METHODS

The research methodology presented here aims to provide a comprehensive and systematic approach to investigating sustainable infrastructure development and project finance in the context of settlements (Gatti, 2024b). The step-by-step methodology is designed to ensure a thorough exploration of regulations, stakeholders, financial capabilities, and risk management, contributing to a nuanced understanding of the intricate dynamics involved in such projects.

1. **Identifying Regulations**: The initial phase involves a meticulous examination of the regulatory landscape governing settlements. The focus is on delving into the intricacies of the Republic of Indonesia Law Number 1 of 2011, comprehending the objectives and principles guiding settlement organization (Nursjanti, 2019). This includes an in-depth analysis of how regulations influence settlement objectives, particularly in creating environments that are healthy, safe, harmonious, and orderly. This regulatory exploration serves as the foundational framework guiding subsequent project activities.

2. **Identifying Stakeholders**: A key aspect of project success is the identification and understanding of stakeholders. In this step, stakeholders are categorized based on their roles and contributions to the project. Initiators, or sponsors, form the core, while implementing entities, such as Special Purpose Vehicles (SPVs), contractors, lenders, insurance providers, off-takers, third-party operators, suppliers, and government entities, are all systematically recognized. This thorough stakeholder identification sets the stage for effective collaboration and paves the way for a well-informed risk management strategy.

3. **Analyzing Financial Capabilities**: Project finance, a pivotal element in infrastructure development, undergoes a detailed analysis. This involves a deep dive into the concept of project finance, emphasizing the formation of SPVs and addressing the complexities associated with risk allocation. Some of the parameters are used to analyze this self sustain region based on this value:
    - NPV is a method used to calculate the net value of income and expenses over a specific period, discounted to present value. A project is deemed viable if the NPV is greater than or equal to 0 and deemed unviable if NPV is less than 0. The calculation of NPV employs the following formula:

$$NPV = \sum_{t=0}^{n} \frac{(C)t}{(1+i)t} - \sum_{t=0}^{n} \frac{(Co)t}{(1+i)t}$$

        - *NPV*: Net Present Value
        - *(C)t*: Cash inflow in year
        - (*Co*)*t*: Cash outflow in year
        - *n*: Economic life of the investment unit
        - *i*: Rate of return
        - *t*: Time
    - BCR represents the ratio of benefits or gains to the costs associated with an investment project, discounted to present value. The formula for determining the B/C Ratio is:

$$B/C = \frac{Benefits - Disbenefits}{Costs}$$

    - IRR is calculated to determine the rate of return on an investment, expressed as a percentage. An investment is considered feasible if the IRR is greater than or equal to the Minimum Acceptable Rate of Return (MARR). The IRR is obtained by considering the interest rate at which the NPV equals zero:

$$IRR = i_2 \frac{-NPV_2(i_2 - i_1)}{NPV_1 + NPV_2}$$

- The payback period is the time required to recover all costs incurred in an investment project through the returns obtained. The rationale behind the payback period method is that the sooner an investment can be recovered, the more desirable it is.

The financial analysis encompasses the exploration of various financial structures, off-take agreements, and risk mitigation mechanisms. Understanding the financial intricacies sets the groundwork for sustainable financial management throughout the project lifecycle.

4. **Risk Management Analysis**: Risk management is a critical component of any large-scale project. Risks are systematically categorized, considering both natural factors, such as environmental uncertainties, and project-specific factors. This includes construction-related risks, financial risks, legal and regulatory risks, and political risks. A meticulous risk management strategy is devised to mitigate the impact of unforeseen events during project execution. This involves developing contingency plans, identifying risk triggers, and establishing robust monitoring mechanisms.

The research methodology delivered in this research provides a structured and thorough approach to investigating sustainable infrastructure development and project finance in settlement contexts. By adhering to this methodology, the study seeks to generate valuable insights into the complex interplay of regulatory frameworks, stakeholders, financial intricacies, and risk dynamics. It is anticipated that the findings of this research will contribute significantly to the existing body of knowledge in this critical domain, offering guidance for future sustainable infrastructure projects.

## RESULTS AND DISCUSSION

The "Five City" development project is strategically located in Karang Joang, North Balikpapan, East Kalimantan. This carefully chosen site, in close proximity to the center of Balikpapan and the expanded area of the Nusantara Capital Region (IKN), holds significant potential to support economic growth and infrastructure development in the region. Furthermore, serious attention has been given to environmental preservation by limiting land use around protected forests, reflecting the "Five City" project's commitment to environmental sustainability.

### *District Development Based on Regulatory Applied*

Zoning within the "Five City" area will play a crucial role in the development planning. Zoning district will consider aesthetic aspects, the needs of the community inhabiting the area, and sustainable land use objectives.

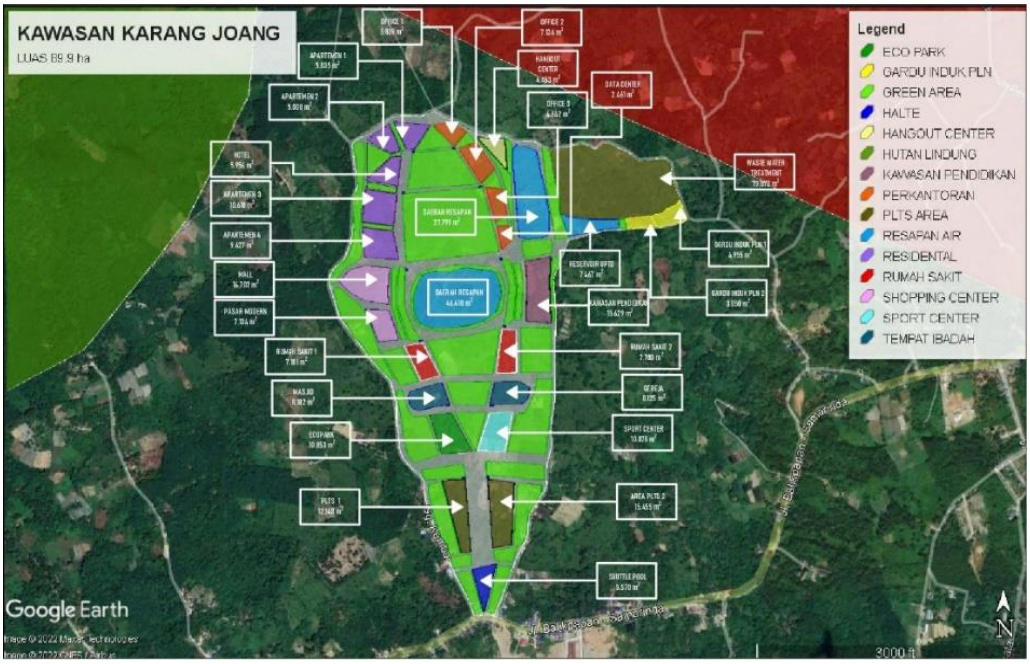


**Figure 1**. Zoning District Area

In alignment with the regulatory framework, the proposed "Five City" development project adheres to the stipulations outlined in the Indonesian law, particularly referring to the Traffic and Public Transportation Law No. 22 of 2009. This legislation defines a terminal as a Public Motor Vehicle base used for regulating arrivals, departures, passenger embarkation and disembarkation, cargo loading and unloading, and mode transfer. Moreover, the legislation mandates that terminals serve as nodes in the transportation network, facilitating passenger and cargo movements efficiently and safely.

Considering the importance of compliance with legal requirements, the proposed shuttle pool and terminal are strategically planned to meet the criteria specified in the law. The zoning and development plans emphasize the need for careful consideration of regulatory aspects to ensure that the project aligns with the national legal framework governing transportation and infrastructure development. This commitment to adherence contributes to the effectiveness, safety, and sustainability of the "Five City" project in accordance with the established regulations.

The zoning discussion reveals specific plans for each district in the "Five City" development project:

- **District I (Transportation Zone):** This district is designed to create a Transit-Oriented Development (TOD) area and initiate the use of environmentally friendly energy. A shuttle pool or terminal, specifically a Type A terminal, will be constructed. This terminal serves both intercity and intracity passenger transport, as well as suburban areas. It accommodates public passenger vehicles for inter-province (AKAP) transport, inter-city within the province (AKDP), city transport (AK), and rural transport (ADES). The terminal's location is crucial for efficient transportation, adhering to regulations and providing a hub for passenger and cargo transfer.
- **District II (Energy Resource Zone):** Focused on being the primary energy source, this district utilizes solar energy in the tropical region with constant sunlight for 12 hours. Solar

energy is harnessed through Photovoltaic Solar Power Plants (PLTS), employing both ground-based solar parks and rooftop photovoltaic systems. The research includes findings from studies on the economic viability of these solar energy systems.

- **District III (City Zone):** Encompassing key city facilities, this district includes residential areas, a central business district (CBD), shopping centers, healthcare facilities, educational zones, places of worship, and tourist destinations. Each component is carefully planned to promote sustainable and green practices, contributing to a harmonious coexistence with nature and a comfortable living environment.
- **District IV (Supporting Zone):** This zone accommodates essential supporting infrastructure, including Waste Water Treatment Plants (WWTP), Electrical Substation, and a Reservoir. The WWTP processes wastewater to make it environmentally acceptable, while the Electrical Substation transforms voltage levels. The Reservoir balances water production and consumption in the water supply system.

With an expansive area of approximately 89.9 hectares, the zoning plan provides flexibility to develop the land optimally and creatively in alignment with the goals of this development project (The details of the use of area will be shown in appendix 1). This approach ensures a comprehensive and sustainable development strategy for the "Five City" region.

### *Stakeholder of Project Financing*

Five city projects will be utilized of "Project Financing", it is a specialized method of funding large-scale infrastructure projects, typically in industries such as energy, transportation, and telecommunications. Unlike traditional corporate financing, where the creditworthiness of the entire company is considered, project finance focuses on the specific project's cash flow and assets.

Results arising from the Stakeholder Scheme encompass various facets of the project's success. Financially, the initiative attains a spectrum of support, comprising grants, loans, and equity investments sourced from government entities, private investors, and non-governmental organizations (NGOs). Simultaneously, through dedicated community engagement, the project cultivates social acceptance, minimizing opposition and fostering a sense of ownership among local residents.

Moreover, collaboration with governmental bodies streamlines regulatory processes, facilitating the efficient acquisition of necessary approvals. The engagement with academic and research institutions results in innovative solutions and advancements, thereby contributing significantly to the project's overall success. The positive ripple effect extends to the local business landscape, where enterprises and entrepreneurs benefit, leading to the establishment of a sustainable business ecosystem supportive of long-term economic growth.

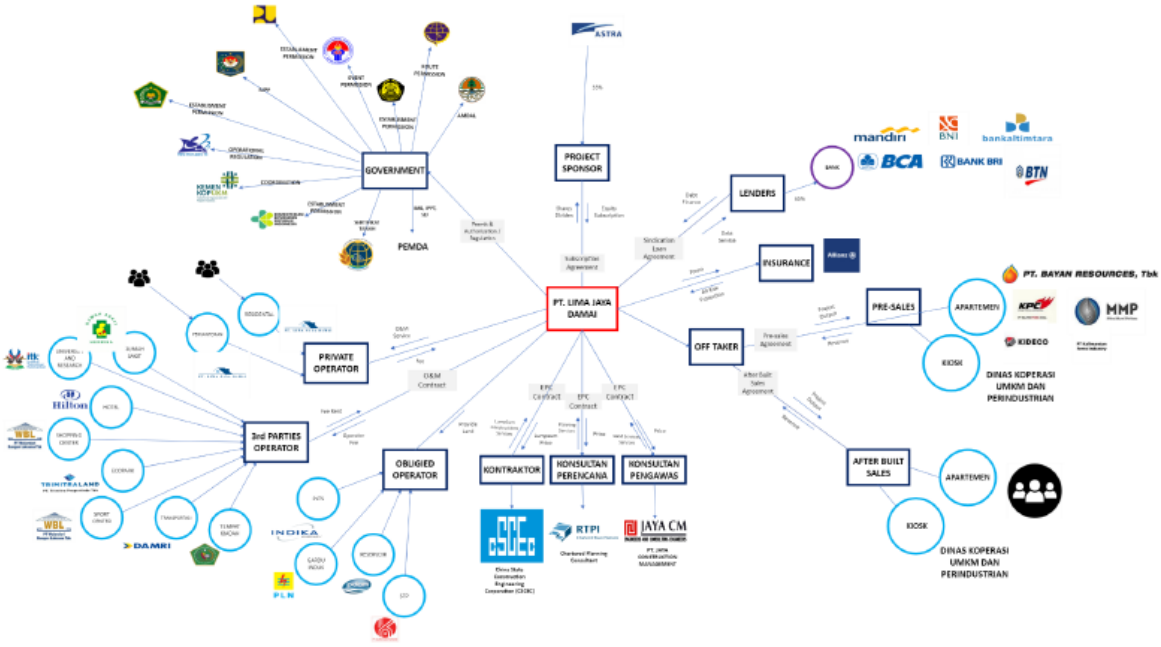


**Figure 2**. Project Financing Scheme

The project's commitment to sustainability is evident in its environmental and social impact, as it successfully achieves predefined sustainability goals, positively influencing the local environment and enhancing social well-being in the region. Importantly, the stakeholder scheme proves instrumental in fostering a resilient and self-sustaining model for the region. This not only ensures the project's long-term viability but also establishes adaptability to evolving circumstances.

The realization of a successful stakeholder scheme hinges on continuous communication, transparency, and a steadfast commitment to addressing the diverse needs and interests of each stakeholder group. Regular monitoring and feedback loops are imperative components of this dynamic process, facilitating ongoing assessment of the project's performance and enabling strategic adaptations as necessary.

The breakdown of the stakeholder scheme for project financing in a self-sustaining region, categorized into the specified groups:

**1. Government:**

- Regulatory support and streamlined approval processes.
- Financial support through grants, subsidies, or tax incentives.
- Collaboration on infrastructure development.

**2. Private Sector:**

- Investment from private investors, including impact investors and corporate entities.
- Collaboration on sustainable business practices.
- Job creation and economic growth within the region.

**3. 3rd Parties Operator:**

- Operational expertise and management of specific project components.
- Efficient project execution through specialized operators.
- Potential revenue-sharing arrangements.

**4. Obliged Operator:**

- Compliance with specific regulatory obligations.
- Contribution to the project's success through adherence to defined standards.
- Collaboration with other stakeholders for integrated project delivery.

**5. Contractor:**

- Timely and cost-effective project execution.
- Quality construction and adherence to project specifications.
- Collaboration with other stakeholders for seamless integration.

**6. Off-Taker:**

- Commitment to purchasing the project's output.
- Long-term contractual agreements for a stable revenue stream.
- Support for the project's financial viability.

**7. Insurance:**

- Risk mitigation through insurance coverage.
- Financial protection against unforeseen events.
- Increased confidence for lenders and investors.

**8. Lenders:**

- Financial support through loans or other financing mechanisms.
- Assurance of project feasibility and risk management.
- Collaborative risk-sharing arrangements with other stakeholders.

The overall results of the project can be categorized into key areas, each playing a crucial role in its success. Firstly, financial support and viability are achieved through a diverse range of funding sources, including grants, loans, and equity investments. This financial diversity contributes significantly to the project's sustainability, providing a solid foundation for its economic well-being. Furthermore, the implementation of risk-sharing mechanisms ensures the establishment of a robust financial structure, safeguarding against unforeseen challenges.

Operational efficiency is another noteworthy outcome, stemming from collaborative efforts with operators and contractors. This collaboration results in the execution of the project in an efficient and timely manner. Additionally, a commitment to adherence to standards and obligations enhances overall operational efficiency, contributing to the project's success in meeting its objectives.

The project's positive social and environmental impact is evident through its engagement with the community. This proactive involvement ensures social acceptance and support, minimizing potential resistance. Moreover, the implementation of sustainable practices translates into tangible and positive environmental outcomes, aligning the project with broader goals of ecological responsibility.

Looking towards long-term success, the collaboration of various stakeholders plays a pivotal role in fostering a self-sustaining model. This collaborative approach ensures not only short-term success but also positions the project for viability over the long term. The commitment to continuous monitoring and adaptation is crucial in this context, as it allows the project to remain responsive to changes in its environment, contributing to its sustained success amid evolving circumstances. In essence, these overall results collectively underscore the comprehensive and

integrated approach taken to ensure the project's success and sustainability across financial, operational, social, and environmental dimensions.

### *Financial Analysis of Project Financing*

The financial analysis of the Five City project yields promising results, suggesting the overall viability and economic attractiveness of the endeavor.

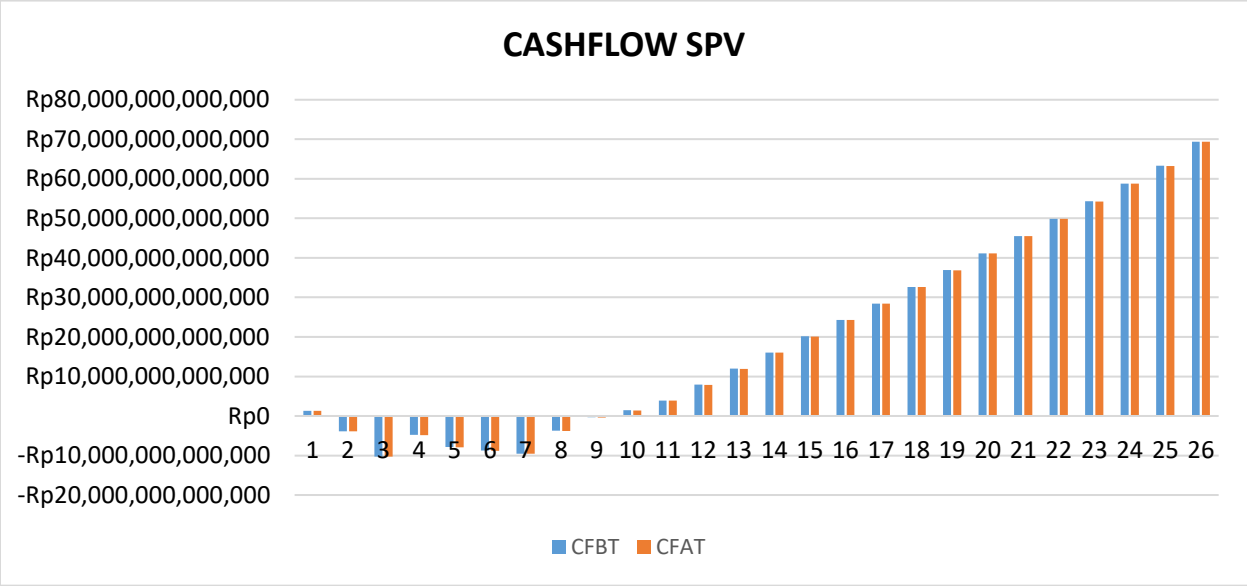


**Figure 3**. Cashflow Diagram for 25 years

Firstly, the Internal Rate of Return (IRR) stands at a robust 17.40%, surpassing the Weighted Average Cost of Capital (WACC) or Minimum Acceptable Rate of Return (MARR) of 8.25%. This indicates a substantial return on investment, providing confidence in the project's financial sustainability. The manual and Excel-assisted calculations underscore the accuracy and reliability of the IRR determination. Financial analysis calculations are based on the following components:

1. **Internal Rate of Return (IRR):** The rate of return on investment or Internal Rate of Return for the Five City project is 17.40%. The IRR is computed manually and with the assistance of Microsoft Excel using the formula $IRR = i2 - NPV2(i2 - i1)NPV1 + NPV2$. Given an IRR of 17.40%, which exceeds the Weighted Average Cost of Capital (WACC) or Minimum Acceptable Rate of Return (MARR) of 8.25%, the project is deemed feasible.

2. **Payback Period:** The payback period for the Five City project is 8 years within a total investment period of 25 years.

3. **Net Present Value (NPV):** The net present value, representing the present value of income and expenditures over the interval period for the Five City project, amounts to Rp. 3,282,652,394,301. The NPV is calculated manually and with the assistance of Microsoft Excel using the formula $NPV = \Sigma(C)t(1+i)t - \Sigma(Co)t(1+i)tnt=0nt=0$. Given an NPV of Rp. 3,282,652,394,301, which is greater than 0, the project is considered feasible.

4. **Benefit Cost Ratio (BCR):** The Benefit Cost Ratio for the Five City project, representing the comparison of profits to costs, is 1.34. The BCR is calculated manually and with the assistance of Microsoft Excel using the formula $B/\ C = Benefits{-}DisbenefitsCosts$. With a BCR of 1.34, exceeding 1, the project is considered economically viable.

Additionally, the Payback Period of 8 years within a 25-year investment horizon demonstrates a relatively swift recovery of costs. This quick payback period contributes to the project's appeal, signaling a timely return on the initial investments made. The Net Present Value (NPV) of Rp. 3,282,652,394,301 further supports the project's feasibility. With NPV exceeding 0, the project is expected to generate positive returns, providing a sound financial rationale for its implementation. The meticulous NPV calculations, both manual and Excel-assisted, enhance the credibility of the financial assessment.

Moreover, the Benefit Cost Ratio (BCR) of 1.34 underscores the favorable comparison of benefits to costs. With a BCR exceeding 1, the project is considered economically sound, indicating that the benefits derived from the project outweigh the incurred costs. The careful calculation of BCR, both manually and with Excel, reinforces the reliability of this metric. In short, the financial metrics collectively paint a compelling picture of the Five City project's economic viability. The favorable IRR, short payback period, positive NPV, and BCR exceeding 1 collectively suggest that the project holds great promise for economic success. These results signify not only a financially sound investment but also a project that aligns with sustainability and long-term success, making it a commendable venture for the development and prosperity of the city.

### *Risk Management Analysis of Feasibility of The Project*

The Five City project's risk management strategy is foundational for its financial viability, encompassing the essential responsibility of addressing unforeseen changes that may impact the project's ability to cover costs, debt payments, and dividends to shareholders (Gatti, 2018). The initial step in this comprehensive risk management approach involves the identification and categorization of risks chronologically into pre-completion (construction) and post-completion (operational) phases. The development of a Risk Breakdown Structure (RBS) further delineates construction, operational, and general risks for both project phases.

The Risk Register, a detailed compilation of each risk's description, probability, impact, and initial mitigation strategies, reveals critical insights into potential challenges. Noteworthy risks include construction delays, technological discrepancies, completion risks, operational challenges, market uncertainties, sales-related risks, and financial factors such as interest rate and inflation risks.

The subsequent risk analysis, conducted through a matrix of probability and impact, aids in classifying risks based on their likelihood and potential consequences. Construction-related risks, with high probability and high impact, demand meticulous planning through techniques like the Critical Path Method and Gantt Chart utilization. Meanwhile, technological risks, identified as low probability and medium impact, necessitate the adoption of proven technologies.

The risk response planning phase tailors specific measures for each risk type. Construction-related risks involve extended work hours and improved methods to enhance performance. Technological risks advocate for the selection of tried and tested technologies. Completion risks, including delays and cost overruns, are acknowledged, with a focus on mitigating strategies.

**Table 1**. Risk Analysis of Project Financing

| Risk | Description | Risk Type | Risk Response | Action |
|---|---|---|---|---|
| Pre-Settlement Risk | | | | |
| Risk of Event Planning | Delays in completing one activity can have a big impact on the next. So the structure on which the SPV relies to generate cash flow during the operating phase may not be available. | High | Conducting grid analysis techniques (Critical path method and project evaluation and review techniques), supported by software, project activity time mapping (Gantt Chart) is carried out | Reduce the level of risk occurrence |
| Technology Risk | Technology contractors and suppliers are not in line, so they often involve untested innovative technologies | Low | Choose tried and tested technology. | Avoid |
| Construction Risk or Completion Risk | • Settlement incomplete or delayed due to force majeure<br>• Settlement with excess costs | Medium | Improving performance such as increasing working hours, evaluation, and improving work methods. | Accept Risk and Create a Response Plan |
| Post-Settlement Risk | | | | |
| Operational risk | When the operator underperforms | Medium | Immediate handling is carried out by conducting training or replacing workers who have poor performance | Transferring Risk to Another Party |
| Market Risk | Where the revenue generated by SPV is less than anticipated. | Medium | Always update existing trends, so as not to be left behind | Accept Risk and Create a Response Plan |
| Sales Risk | Lack of public interest in buying or renting apartments, offices, and hotels | Medium | Promoting by always showing the advantages they have, which competitors or competitors do not have. | Accept Risk and Make a Plan |

In conclusion, the Five City project's proactive risk management approach, characterized by a thorough identification, analysis, and response planning for each risk type, underscores its commitment to financial stability, timely completion, and long-term success. By effectively

managing potential challenges, the project aims to position itself as a sound and feasible venture in the realm of project financing.

## CONCLUSION

In conclusion, the core facility of the Five City project comprises four vertical residential towers. Additionally, to enhance the living experience and comfort of the residents within the vicinity, various supporting amenities such as a shopping center, worship place, entertainment area, education zone, central business district, utility area, renewable transportation system, and health care center are provided.

Upon a comprehensive analysis spanning a 25-year investment period, the Five City project demonstrates feasibility, as indicated by financial parameters including an Internal Rate of Return (IRR) of 17.4%, a Benefit-Cost Ratio (BCR) of 1.34, an 8-year Payback Period, and a Net Present Value (NPV) of Rp. 3,282,652,394,301.

The risk identification process categorizes risks into three phases: construction phase risk, operational phase risk, and combined construction and operational phase risk. The analysis reveals that the risk associated with planning activities during the construction phase is of high significance to the project. Furthermore, interest rate risk during both the construction and operational phases also poses a high level of risk. Mitigation planning is implemented to prevent the occurrence of these risks, followed by a risk response plan to address these risks should they materialize.

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**APPENDIX 1: DETAIL UTILIZATION OF ZONING**

| NO | FACILITIES | SOURCE O&M | REVENUE SOURCES |
|---|---|---|---|
| 1 | RECIDENTAL | - Building maintenance- Landscape maintenance- Operator management fee- Electricity- PDAM- Replacement ME equipment | - Pre sales and after sales- Service charges- Parking residents- Rent tenants |
| 2 | HOTEL | Operator management fee | Hotel management (Management Contract + Franchise) |
| 3 | OFFICE | - Building maintenance- Landscape maintenance- Electricity- PDAM- Replacement ME equipment | - Office rental- Parking subscription- Service charges |
| 4 | SHOPPING CENTER | Operator management fee | Land and building leases |
| 5 | HOSPITAL | Operator management fee | Land and building leases |
| 6 | EDUCATION ADVICE | Operator management fee | Operating income |
| 7 | ECO PARK | Operator management fee | Admission sales |
| 8 | SPORT CENTER | Operator management fee | Land and building leases |
| 9 | MOSQUE | - Event creation- Cleaning service | - Rent hall- Rent tenants- Sponsors during holidays |
| 10 | CHURCH | - Event creation- Cleaning service | - Rent hall- Rent tenants- Sponsors during holidays |
| 11 | SHUTTLE POOL | - Fleet maintenance- Annual transport license | Ticket sales |
| 12 | DATA CENTER | - IP lease- Internal secure network- Internet dedicated- Building maintenance | - HQ Provider- Fiber utility land lease |
| 13 | SUBSTATION (ELECTRICITY) | Purchase of electricity to PLN | Sales of electricity to residents |
| 14 | RESERVOIR (WATER) | Purchase of raw water to PDAM | Sale of water to residents |
| 15 | WWTP (WASTE) | WWTP (utilities and buildings) maintenance | Treatment of waste into fertilizer |
| 16 | Solar Power Plant | Operator management | Carbon credits |